

What is claimed is:

1. A dual direction bypass valve for a fluid filter, comprising:
 - a first retainer which houses a first spring at one end, and a first disk disposed at another end of said first spring; and
 - a second retainer, disposed opposite to said first retainer, said second retainer which houses a second spring at one end, and a second disk disposed at another end of said second spring;
 - wherein said second disk is operative to compress said second spring in a first direction toward said second retainer; and
 - wherein said first disk is operative to compress said first spring in a second direction toward said first retainer, said first direction which is opposite to said second direction.
2. A fluid filter comprising:
 - an inlet for passage of fluid into said filter;
 - an outlet for passage of fluid leaving said filter;
 - a filter media disposed between said inlet and said outlet, for filtering said fluid;
 - a valve body comprising:
 - a first retainer which houses a first spring at one end and a first disk disposed at another end of said first spring; and
 - a second retainer, disposed opposite to said first retainer, said second retainer which houses a second spring at one end, and a second disk disposed at another end of said second spring; and
 - an end cap separating said first disk from said second disk;

523
12
wherein said second disk is operative to compress said second spring in a first direction toward said second retainer; and

wherein said first disk is operative to compress said first spring in a second direction toward said first retainer, said first direction being opposite to said second direction.

3. A fluid filter comprising:

a housing defining a chamber, said chamber having an inlet at one end through which fluid enters said filter, and an outlet at another end through which said fluid leaves said filter;

a filter media disposed in said chamber between said inlet and said outlet, for filtering said fluid;

means for allowing a fluid to flow from said inlet to said outlet in a first fluid flow path, through said filter media;

forward flow bypass means for allowing said fluid to flow from said inlet to said outlet in a second fluid flow path, bypassing said filter media; and

reverse flow bypass means disposed adjacent said forward flow bypass means, for allowing said fluid to flow in a third fluid flow path, bypassing said filter media.

4. The fluid filter according to Claim 3, wherein said first fluid flow path includes said inlet, a space between an interior face of a central wall of said chamber and said filter media, said filter media, a central passage within said chamber, and said outlet.

5. The fluid filter according to Claim 3, wherein said means for allowing said fluid to flow in said first fluid flow path comprises:

a plurality of apertures in a first retainer housing a first spring and a first disk, leading to a space disposed between an interior face of a central wall of said chamber and said filter media; and

a central passage within said chamber;

wherein said fluid passes through said apertures of said first retainer housing, said space, said filter media, and said central passage in said first fluid flow path.

6. The fluid filter according to Claim 3, wherein said reverse flow bypass means includes:

a front valve body having a first retainer housing a first spring at one end, and a first disk disposed at another end of said first spring; and

an end cap against which said first disk is seated, said end cap having holes in a periphery of said end cap which are sealed by said first disk;

wherein said first disk is operative to compress said first spring, moving said first disk from said end cap and opening up said holes for said fluid to pass through said front valve body to said outlet, bypassing said filter media.

7. The fluid filter according to Claim 6, wherein said forward flow bypass means includes:

a rear valve body having a second retainer housing a second spring at one end, and a second disk disposed at another end of said second spring;

wherein said end cap includes a central aperture, and said second disk is disposed against said end cap sealing said central aperture; and

wherein said second disk is operative to compress said second spring, to allow said fluid to pass through said central aperture, through said rear valve body to said outlet, bypassing said filter media.

8. The fluid filter according to Claim 3, wherein said second fluid flow path leads from said inlet through said front valve body and through said rear valve body toward said outlet, bypassing said filter media.

9. The filter according to Claim 8, wherein said third fluid flow path leads from said outlet through said central passage, through said front valve body, to said inlet, bypassing said rear valve body and said filter media.

10. The filter according to Claim 3, further comprising a magnet positioned around a side wall of an interior face of said chamber, which attracts and retains magnetically susceptible particles in said fluid.

11. The filter according to Claim 5, further comprising a stabilizing spring disposed between said first retainer and said housing, said stabilizing spring which holds said first retainer in place within said chamber.

12. A fluid filter comprising:
a housing defining a chamber, said chamber having an inlet at one end and an outlet at another end, through which fluid passes from said inlet to said outlet;

a filter media disposed between said inlet and said outlet, which filters said fluid;

a front valve body having a first retainer housing a first spring at one end, and a first disk disposed at another end of said first spring;

an end cap against which said first disk is seated, said end cap having holes in a periphery of said end cap which are sealed by said first disk, and said end cap having a central aperture;

a rear valve body having a second retainer housing a second spring at one end, and a second disk disposed at another end of said second spring, said second disk sealing said central aperture of said end cap; and

a stabilizing spring disposed between said first retainer and said housing within said chamber, to hold said front valve body stably within said chamber;

wherein said first disk is operative to compress said first spring in a first direction, moving said first disk away from said end cap and opening up said holes in said periphery of said end cap, allowing fluid to pass through said holes and said front valve body to exit said filter, bypassing said filter media; and

wherein said second disk is operative to compress said second spring, to allow said fluid to pass through said central aperture of said end cap from said front valve body, through said rear valve body to exit said filter, bypassing said filter media.

13. A method of preventing clogging of a fluid which flows through a filter, comprising:

applying a fluid to said filter through an inlet;

allowing a pressure of said fluid to displace a disk disposed at one end of a spring housed in a retainer of a valve body, such that said disk compresses said spring;

opening an aperture in an end cap against which said disk is seated, by movement of said disk to compress said spring; and

allowing said fluid to flow through said aperture to exit said filter without being filtered by a filter media.

14. A method of preventing clogging of a fluid which flows through a filter, said filter which is installed backwards, the method comprising:

applying a fluid to said filter through an inlet;

allowing a pressure of said fluid to displace a disk disposed at one end of a spring housed in a retainer of a valve body, such that said disk compresses said spring;

opening a plurality of apertures in an end cap against which said disk is seated, by movement of said disk to compress said spring; and

allowing said fluid to flow through said apertures to exit said filter without being filtered by a filter media.

15. A fluid filter comprising:

an inlet for passage of fluid into said filter;

an outlet for passage of fluid leaving said filter;

a filter media disposed between said inlet and said outlet, for filtering said fluid;

a valve body comprising a retainer which houses a spring at one end and a disk disposed at another end of said spring; and

an end cap disposed against said disk;

wherein said disk is operative to move away from said end cap and to compress said spring in a direction toward said retainer, allowing fluid to pass through said retainer, bypassing said filter media, to exit said filter.

16. The filter according to Claim 15, wherein said end cap comprises a central aperture and a plurality of peripheral holes.

17. The filter according to Claim 16, wherein said valve body is a rear valve body, and when said disk compresses said spring, said disk moves away from said end cap, unsealing said central aperture of said end cap for passage of said fluid therethrough.

18. The filter according to Claim 16, wherein said valve body is a front valve body, and when said disk compresses said spring, said disk moves away from said end cap, unsealing said peripheral holes of said end cap for passage of said fluid therethrough.

19. The filter according to Claim 15, wherein said disk is made of plastic.

20. The filter according to Claim 15, wherein said retainer, said spring, and said end cap, are made of metal.